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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Stephen F. Linder, et al.
Application No.:	08/878,978
Filed:	June 19, 1997
Examiner:	King Y. Poon
Art Unit	2624
Title:	METHOD AND SYSTEM FOR PROCESSING AND RENDERING OBJECT ORIENTED NEUTRAL IMAGE DATA

Commissioner for Patents
Washington, D.C. 20231

Attn: Board of Patent Appeals and Interferences

APPEAL BRIEF

Sir:

This revised brief is in furtherance of the Notification of Non-Compliance with 37 1.192(c) mailed January 23, 2002, in which the Examiner objected to the summary of the invention for not referring to the specification by page and number line, citing MPEP 1206.

1. Real Party of Interest

The assignee, Xerox Corporation, is the real party in interest.

2. Related Appeals and Interferences

There are no related appeals or interferences.

3. Status of the Claims

Claims 1-5, 8 and 9 are pending and have been finally rejected. Claims 6, 7 and 10 were canceled by Applicants' amendment mailed 8/9/01, which was entered upon filing of this appeal. Claims 1, 3-5, 7-9 are pending and have been finally rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,008,812 to Ueda et al. (Ueda) and U.S. Patent 4,783,838 to Matsunawa (Matsunawa). Claim 2 is pending and has been finally rejected under 35 USC 103(a) as being unpatentable over Ueda and Matsunawa as applied to claim 1 and further in view of U.S. Patent 5,774,721 to Robinson (Robinson).

4. Status of Amendments

It is believed that all amendments have been entered.

5. Summary of Invention

The invention relates to the processing and rendering of object oriented image data, especially the processing and rendering of object oriented neutral image data separately from non-neutral image data (see page 1, lines 15-19 of the specification). Many printing systems allow a user to combine different types of objects into a composite document. For example, a user may combine photographic images, text, and business graphics (e.g., charts) into a single document, and each of these objects may be either color or black and white. To achieve satisfactory results each object should be processed differently. For example, rendering a photographic image may require skewing the color attributes in a predetermined way, but this type of skewing may cause business graphics in the same document to appear washed out.

To resolve this problem, object oriented rendering systems have been developed to render the different objects differently. In an object oriented rendering system, the objects which make up a composite document are rendered differently. For example, photographic images will be processed differently from business graphics (see page 2, lines 18-24 of the specification).

However, the neutral rendering requirements for different object types may vary. More specifically, neutral rendering refers to the appearance of black, greys, and white on a printed page or output device (see page 3, lines 1-2 of the specification). This rendering may be understood in terms of process (multi-color) or true (single or no color) neutrals. Table 1 below

provides an illustration as to how neutral rendering may vary from object to object (see page 3, lines 5-9 of the specification).

Table 1

OBJECT	BLACKS	GREYS	WHITES
Bitmap	Process Black	Process black	Does not have to be Paper White
Graphic	Single Component Black	Single Component Black	Paper White
Text	Single Component Black	Single Component Black	Paper White
Photographic	Process Black	Process Black	Does not have to be Paper White

As illustrated in Table 1, process blacks and greys may be acceptable for photographic objects since true blacks or greys may introduce unwanted gloss differences. On the other hand, true blacks or greys are desired for black lines within a graphic object so as to reduce misregistration and imperfect color balance artifacts. Thus, an object may need to have its neutral image rendered in a manner different from the rendering of the non-neutral image. These diverse requirements cause problems when rendering objects in a composite image (see page 3, lines 9-17 of the specification).

Applicants' invention, as presently claimed, is directed to a system for processing object-oriented image data in which a composite image has first been broken into its constituent image objects. See for example, Fig. 8 and the description of an object oriented rendering system in the specification at page 16, lines 4-14. However, Applicant's invention differs from a conventional object oriented rendering system in that it includes a first parser circuit (100 on Fig. 4) which parses "the object-oriented image data into non-neutral object-oriented image data and neutral object-oriented image data". See Figs. 3 and 4 of the application and the description in the specification at page 17, lines 3-17. Note that image data is processed in the form of image triplets. An image triplet includes color image data, color space data and object type data.

A second parser circuit (101 on Fig. 4) parses "the neutral object-oriented image data into black object-oriented image data, grey object-oriented image data, and white object-oriented image data". See Fig. 4 and the description in the specification at page 17, line 18 to page 18, line 7. Referring to Fig. 4, note that each parsed neutral object oriented image data is described

by an image triplet which includes an object type. Each black object-oriented image data is described by an image triplet which includes an object type (and similarly for the grey and white object oriented image data). A neutral color processing circuit processes "the black object-oriented image data, the grey object-oriented image data, and the white object-oriented image data." See Fig. 5 and the description in the specification at page 19, lines 6-7. Thus the image object's neutral object-oriented image data is processed separately from the object's non-neutral object-oriented image data. The invention enables the different rendering requirements of the different image object types (see for example Table 1 of the specification listed above) to be processed differently.

6. Issues

The sole issue is whether the final rejection of claims 1, 3-5, 7-9 under 35 USC 103(a) as being unpatentable over Ueda and Matsunawa and the final rejection of claim 2 under 35 USC 103(a) as being unpatentable over Ueda and Matsunawa as applied to claim 1 and further in view of Robinson is sustainable.

7. Grouping of Claims

Each of claims 1-5, 8 and 9 may be considered as a single group.

8. Argument

MPEP 2143 enumerates three criteria for establishing a prima facie case of obviousness. First there must be some suggestion or motivation, either in the reference themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations.

The Applicant respectfully submits that a prima facie case of obviousness does not exist because the prior art references do not teach or suggest all the claim limitations.

Regarding independent claims 1, 4 the Examiner has taken the position that Ueda teaches a system for processing object-oriented image data including a first parser circuit for parsing the object oriented image data into non-neutral object-oriented image data and neutral object

oriented image data (citing fig. 1, col. 5 lines 25 and 35, program step, fig. 3, abstract, fig. 16a) so that the object's neutral object oriented image data is processed separately from the object's non-neutral image data.

After careful review, it is Applicants' understanding that Ueda teaches essentially a conventional object oriented rendering system. Ueda categorizes image types into a hierarchical structure (col. 5, lines 20-36) of "objects". Images are first categorized into three image types: photograph, graphics and text. Each of the three categories is further categorized into additional image types (see Figs. 11-15). For example, photograph may be categorized into portrait, landscape and still life. Ueda does this so that an operator may select and designate a desired printing characteristic for a particular image or image portion (abstract). Different software programs are provided to the user in order to change printing characteristics (col. 4, lines 30-45. col. 7, lines 53-57) of a selected image type.

Images in each of Ueda's categories or "objects" may include neutral image data and non neutral image data. For example, an image or image portion classified as a photograph – landscape may include both neutral image data and non-neutral image data. However, processing an image categorized as a photograph – landscape differently from processing an image categorized as text – bitmap font is not the same thing as "parsing the object-oriented image data into non-neutral object-oriented image data and neutral object-oriented image data" before it is processed. In other words, Ueda does not appear to teach parsing any of the categories of images (Figs. 11-15) or "objects" into neutral object oriented image data and non-neutral object oriented image data prior to processing.

The Examiner has taken the position that Matsunawa, in the same area of converting a multi-gradation image into a binary image (fig. 1b Matsunawa and col. 8, lines 5-10 Ueda) teaches using a parser circuit (11, fig. 18, col. 13, lines 20-27) to parse the multi-gradation image into black object-oriented image data (see value 16 of fig. 2, fig. 7b), grey object-oriented image data (see value 2-15, fig. 2, fig. 7b), and white object-oriented image data (value 0 of fig. 3a, fig. 7b) and a neutral color processing circuit (14, fig. 18, col. 13, lines 25-32) for processing the black object-oriented image data, grey object-oriented image data, and white object-oriented image data (fig. 7) such that a binary image is created.

After careful review, it is Applicants' understanding that Matsunawa teaches an image processing system and method for restoring a tonal picture from binary image data and that Matsunawa does not teach an object-oriented image rendering system. Matsunawa does not teach a parser circuit for parsing neutral object-oriented image data into black object-oriented image data, grey object-oriented image data, and white object-oriented image data. Circuit 11 is a "circuit for converting input image signals into binary signals", so that a degraded image can be reconstructed according to a concentration conversion instruction (circuit 15).

Combining Matsunawa with Ueda does not teach or suggest Applicant's invention. Nothing in Matsunawa overcomes the lack of teachings in Ueda. Even if one skilled in the art were motivated to combine Ueda and Matsunawa, he would not obtain Applicants' invention. Ueda teaches a conventional object oriented image processing system, albeit with several sub-categories of "objects"; Matsunawa teaches a method of reconstructing degraded images. Combining Ueda with Matsunawa, would at most provide a method of reconstructing an image type or object. Such a combination is not Applicants' invention. Accordingly, the Examiner has failed to establish a prima facie case of non-obviousness with respect to the independent claims 1, 4.

The Examiner has taken the position that regarding claim 2, Robinson teaches a separate processing circuit for each of the black, grey and white image data. Nothing in Robinson overcomes the lack of teachings in either Ueda or Matsunawa discussed above.

With respect to dependent claims 2, 3, 5, 8, 9, Applicants respectfully submit that they depend on and incorporate the limitations of their respective independent claims, which are not taught by the Ueda and Matsunawa as described above. Thus, the Applicant respectfully submits that Ueda in view of Matsunawa does not teach or suggest all the claim elements of dependent claims 2, 3, 5, 8, 9 so that a prima facie case of obviousness under 35 U.S.C. §103 has not been established.

9. Conclusion

The Honorable Board is urged to reverse the final rejection of Claims 1-5, 8 and 9.

Respectfully submitted,

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APPENDIX

Claims 6, 7 and 10 have been canceled by filing of this appeal.

1. A system for processing object-oriented image data, wherein object-oriented image data comprises image data pertaining to an image object, comprising:

a first parser circuit for parsing the object-oriented image data into non-neutral object-oriented image data and neutral object-oriented image data;

a second parser circuit for parsing the neutral object-oriented image data into black object-oriented image data, grey object-oriented image data, and white object-oriented image data; and

a neutral color processing circuit for processing the black object-oriented image data, the grey object-oriented image data, and the white object-oriented image data, whereby the image object's neutral object-oriented image data is processed separately from the object's non-neutral object-oriented image data.

2. The system as claimed in claim 1, wherein said neutral processing circuit comprises:

a black processing circuit to process the black object-oriented image data;

a grey processing circuit to process the grey object-oriented image data; and

a white processing circuit to process the white object-oriented image data.

3. The system as claimed in claim 1, wherein said neutral processing circuit processes only the black, grey, and white object-oriented image data according to a selected feature set.

4. A method for processing object oriented image data, wherein object-oriented image data comprises image data pertaining to an image object,, comprising:

(a) parsing the object oriented image data into non-neutral object-oriented image data and object-oriented neutral image data;

(b) parsing the neutral object-oriented image data into black object-oriented image data, grey object-oriented image data, and object-oriented white image data;

(c) processing the black object-oriented image data, the object-oriented grey image data, and the white object-oriented image data separately from the non-neutral object-oriented image data; and

(d) processing the processed object-oriented black image data, the processed object-oriented grey image data, the processed object-oriented white image data, and the non-neutral object-oriented image data together.

5. The method as claimed in claim 4, wherein said step (c) processes the black, grey, and white image data according to a selected feature set.

8. The system of claim 1, wherein an image object comprises text, graphic, bitmap or photographic.

9. The method of claim 5, wherein an image object comprises text, graphic, bitmap or photographic.